

ABSTRACT OF THE DISCLOSURE

This invention relates to a piezoelectric ceramic of the formula

$Pb_{(1-z)}M_z(Mg_{1/3}Nb_{2/3})_x(Zr_yTi_{1-y})_{1-x}O_3$  where M can be either Sr or Ba or both and x is between about 0.1 and about 0.7, y is between about 0.2 and about 0.7, and z is between about 0.02 and 5 about 0.1 and to method for preparing the piezoelectric ceramic. The piezoelectric ceramic is provided as a composite perovskite structure. Additional materials or dopants can be added to the piezoelectric ceramic of the present invention. Example of dopants that can be added to the piezoelectric ceramic include, but are not limited to:  $MnO_2$ ,  $Ni_2O_3$ ,  $TeO_3$ ,  $TeO_2$ ,  $MoO_3$ ,  $Nb_2O_5$ ,  $Ta_2O_5$ ,  $CoCO_3$ , and  $Y_2O_3$ . The piezoelectric ceramics of the present invention can be used to 10 fabricate piezoelectric elements for a wide variety of devices that can be fabricated to exhibit high power applications including miniaturized displacement elements, buzzers, transducers, ultrasonic sensors and ultrasonic generators, and the like.